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PATHOLOGICAL CONDITIONS OF THE BOVINE JOINT AS A CLINICAL MANIFESTATION OF BANG'S DISEASE*

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To many of you the term "Bang's disease" will not be quite so familiar as the commoner and better known contagious or epizootic abortion; perhaps, therefore, it would be as well to explain that it has been substituted in accordance with the recommendation of the American Veterinary Medical Association, who adopted it as the official name of the disease, previously referred to as contagious abortion. It has been adopted mainly because it gives a general name to what is nothing more than a group or chain of clinical manifestations constituting the familiar bovine scourge; in addition, it disposes of the misleading term "abortion" which has done much to create the impression that the act of abortion is the only sign, whereas we now know it is not the sole phenomenon.

To refer to Bang's disease as a group or chain of clinical manifestations is perhaps as good a way as any of illustrating the various phenomena associated with abortus infection in a herd. Far from research lessening the number of links in the chain, it is continuing to add new facts to our basic knowledge of the disease and it has recently been suggested that perhaps the bovine joint may be included in the herd manifestation of the disease, forming the chain of links in which abortion, a high percentage of sterility, retained placentæ, udder infection, testicular infection, and diminished milk yields are included.

From the outset let me emphasise that this conception is theoretical and put before you as a supposition; it is based on clinical and circumstantial evidence and has not emanated from the results of detailed and proven research. Perhaps it would be as well for me to confess that my object in presenting it to you is a selfish one in that the opportunity has been taken to clarify my own conception and if possible to rid myself of any misguided notion I may have conceived in my preliminary investigations, for was it not Huxley who said "sit down before Fact as a little child, let it lead you to wherever and to whatever abyss Nature may decide; be prepared to give up preconceived notion or you will learn nothing."

The first fact we must face is the necessity for critical comment on the unquestioned ignorance existing on disease of bones and joints in domestic animals generally and the bovine subject particularly. It is obvious that little, if any effort has been made to investigate or classify the conditions forming this important branch of bovine medicine and surgery. In veterinary science disease of bones and joints has hitherto been confined almost solely to the equine subject; it is very humiliating, therefore, to admit that, in spite of the attention lavished on this phase of our art by veterinary workers for the past hundred years at least, we are still strangely lacking in an exact knowledge and understanding of the etiological, pathological and therapeutic processes concerned.

With the gradual passage of the horse and advent of the dairy cow as a unit of economic importance to the country practitioner many of the false notions, traditional theories and age-old remedies were transferred accordingly. Man does not demand speed or easy movement from the cow, and this fact has naturally condoned and encouraged a spirit of "laissez-faire" and without doubt provided an excellent cloak for our shortcomings. The conceptions and theories of fifty years ago are still in existence and whilst many of these theories are plausible, the fact that they have stood the test of time is no indication of their soundness. Diseases of the bovine joint may not be so spectacular as they were in the horse, but it would not be difficult to prove that the economic loss, depreciation in value, and reduction of efficiency from impairment of function does, in the cow, fully compare with the importance of the condition in the horse and demands its recognition as a branch of surgery fully entitled to clinical research and considerable revision.

In medical science the social importance of joint disease in man has been seriously recognised and estimated not only in actual cash but in decreased efficiency of the individual as an economic unit of the nation. Generally speaking, both in animals and man the elementary classification of joint disease leaves much to be desired in that clinical, pathological and anatomical classifications are jumbled together, leaving the student in much confusion as to the true nature of things.

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DEPT. OF VET. MEDICINE

Clinicians, so far as veterinary science is concerned, classify disease of the bovine joint according to their individual tastes; terms such as bursitis, synovitis, arthritis, periarthritis, rheumatism, articular rheumatism, rheumatoid arthritis being all loosely used to indicate any inflammation of a joint without a true regard to the pathological processes involved. For the purpose of this paper my remarks will be confined, therefore, to what one might term chronic inflammation of the joint and its surrounding structures, constituting what is very aptly described by laymen as a " big joint "—a term I propose to use for convenient description.

Clinically you are all familiar with the typical condition; big joints are a common feature in dairy cows, their incidence in the dairy herds of this country being perfectly extraordinary. The joints chiefly affected are, in order of importance, the hock (one or both), knee (one or both), stifle (unilateral), fetlock (fore, unilateral). In the hock the inflammatory process may be acute or chronic, with proportional disturbance in general health. If the inflammation is acute, both joints are usually affected with constitutional symptoms and occasionally serious impairment of the animal's function, milk flow being retarded and condition rapidly lost; local symptoms are those of an acute inflammation. If resolution occurs the joints return to normal, as a rule. In the chronic form the onset is gradual and usually only one hock is affected, enlargement taking place slowly and forming a soft, puffy, fluctuating swelling on the lateral aspect of the joint, which may grow to varying proportions. The hair over the part gives a " tufty " appearance or an impression of growing the wrong way; there is little pain and apparently no interference with general health; there may or may not be some degree of lameness. In the knee joint, the condition is usually chronic in nature, the typical puffy swelling gradually enlarging until it may assume fantastic proportions meriting the special term " hygroma." From traumatism due to increased size, the hair becomes denuded and the skin thickened to elephantine proportions. This type of case needs no further introduction.

The stifle joint, when attacked, is usually acutely inflamed, unilateral and accompanied by severe and rapid constitutional disturbance, quickly reducing the animal to a physical wreck, sometimes resulting in total loss. It is a typical arthritis to which the term " gonitis " is occasionally applied.

In the fetlock joint, usually in the fore limb, there is considerable acute inflammation, swelling, pain and lameness.

Beyond what I have just described, I will go no further into clinical details, as you are familiar with the condition, and for the purpose of my paper you will understand that it is the chronic inflammation of the hock and knee joints that I am accepting as my typical case, constituting what one might term a chronic bursitis lesion. It is rather unfortunate that time would not warrant my going into details of laboratory procedure in examining these specimens. On opening up into the puffy swelling the skin is found to be considerably thickened, a sac containing an excessive amount of synovial or bursal fluid constituting the swelling. In the knee joint this fluid, normally a pale, straw colour, may show a variety of changes ranging from a slight to a very dense turbidity and, in cases where suppuration has supervened, to a thick creamy pus. Occasionally quite large masses of fibrinous consistency in ball-like formation float freely in the sac. In the hock joint the bursal fluid is rarely clear, being generally sero-sanguineous in character and in some cases showing numerous rice-like bodies of fibrin. The bacteriological examination of the bursal fluid is disappointing, as in the majority of cases it proves to be completely sterile by ordinary cultural methods and animal inoculation; recent work has indicated, however, that a serological examination of the bursal fluid may be productive of interesting results. As a rule, the joint capsule and joint cavity appear to be normal, although at times quite definite pathological changes in the periarticular tissues may be noticed. The joint cavity should be exposed with great care to avoid any possibility of injuring the surface of the bones during the process and so confusing the issue. Anatomical examination depends upon obtaining the bones devoid of all tissue and it has been found that the best way to do this is to remove them, not by boiling or scraping, but by bacterial decomposition which macerates and digests the softer tissues, leaving the bones intact for further examination. Rather than go, on paper, into details of bony pathological changes, you have before you, for examination, a number of specimens prepared in this manner from typical cases of bursitis in the knee and hock joints and, as you will see, there is obvious bony change and some evidence of arthritic ulceration and erosion, constituting what one might term an osteo-arthritis. The pathological changes are not uniform, active disease, degeneration and proliferative changes all taking place at once. The important point is that clinically these changes could not be suspected in the living animal, the symptoms being merely those of a chronic bursitis showing no sign of bone disease or arthritic changes. The chronic and progressive character of the changes would almost appear to suggest some metabolic derangement; there is outgrowth and fusion of bone resulting in ankylosis in some and rarefying changes in others. These changes are due to more than the ordinary theoretical factors

usually advanced, and the fact that ordinary bacteriological methods have failed, in many cases, to demonstrate or incriminate any organism or group of organisms, leads one to hope that a line of enquiry such as I will suggest will throw light on the etiology of chronic joint diseases not only in animals but also in man.

At this stage it would be well to recapitulate the theories usually advanced by stockowners and veterinarians to explain the incidence of big joints and to avoid, if possible, any critical discussion of the pros and cons of each theory. In human science the theories advanced to account for chronic joint complaints are numerous enough to be distinctly unwieldly; in veterinary science we have more simple fastes, what I might term dietetic and hygienic theories being advanced by their respective schools of thought.

The dietetic theory appears to be the favourite view of causal factor held by owners, herd managers and others concerned with the administration of well-run dairy herds where scientific feeding principles are the basis of milk production and herd efficiency. The view appears to be, that an excess amount of certain foodstuffs in the ration renders the animal susceptible to an attack. The foodstuffs upon which suspicion usually rests appear to be Indian meal and pea meal, therefore it is all the more instructive to dwell upon the fact that whilst these two articles are chiefly indicted, their analysis reveals them to be widely different in their chemical composition, Indian meal being richly carbohydrate and pea meal on the protein side. Evidence does not seem to support the possibility of their being of any importance in a swaying of the balance one way or another with regard to chemical composition of the food. So far we have been spared the ubiquitous mineral deficiency theme and the possibility of vitamin D deficiency has not enlisted any advocate as yet. I feel that very little evidence would suggest that it could not be a mere deficiency and that, so far as the bovine subject is concerned, this line of enquiry will not prove to be fruitful of any dramatic discovery. The dietetic theory is intimately bound up with disturbance of the metabolic equilibrium, but it is to other factors rather than food that we must look for the disturbing agent.

The hygienic theory is perhaps the commoner and is intimately connected with traumatism to the joint from badly constructed shippons, standings, floorings, ties, mangers, and dung channels. Dampness, chills, draughts and colds are views frequently advanced to explain joint abnormality in the herd—the word " chill " has long befriended the casual diagnostician, but the evidence in its favour is, to say the least of it, very conflicting. The question of housing and construction is naturally linked with the conditions of life and handling of the animals concerned, therefore it is all the more disconcerting to discover that it is in just those herds where one would least expect to find them that one experiences cases of big joint most. Much of the evidence upon which these theories rest is conflicting and contradictory, and it will require to be still more extensive before we can assess the relative merits, value and importance of such factors as damp, chill, dietetic error and constructional defects. There is little doubt that they enter into the scheme of things, perhaps as predisposing causes, but the problem is not straightforward and the possible factors are so closely intermingled that it is difficult to single out any one in particular. That another factor operates is a reasonable assumption, and from a clinical point of view the whole picture points directly to an infective agent. What this agent is, it is not easy to determine. To attempt to review the bacteriological flora associated with diseased joints would be a large task of doubtful and questionable value to this paper; it would be easier to state that the sum total of the findings shows that no organism or group of organisms can be definitely incriminated. It would be reasonable to suggest that if there is an infective agent present it could be isolated; unfortunately, however, it must be recorded that in a large percentage of cases, competent observers have failed to demonstrate a causal organism and that there has been a complete lack of success in reproducing the condition experimentally in animals with the organisms recovered. In spite of this, however, it is extremely probable that the infective theory is sound. Perhaps the failures have been due to faulty technique — technique which is lacking in certain essential cultural details which time alone, coupled with increasing knowledge and improved methods, will put right. The fact that an organism cannot be isolated from a diseased joint does not prove that it is not present. It has already been suggested that recent work with serological examination has given promise of good results and it is possible that serological and biochemical investigation of the joint exudates and fluids will do much to wrest some of the secrets from the failures of bacteriology and cultural experiments.

Personal observations and those of other observers have been significant enough to warrant the belief that the organism of Bang's disease may be the factor responsible for the unquestionably greater incidence of big joint in herds infected with that disease. That the condition is common in such herds is an observation that can hardly escape an observant individual: it has been recorded in this country, in Sweden and the U.S.A. In view of the complicated course of infection in Bang's disease and the widespread activities of the *Brucella abortus*, it

might not be far wrong, in view of clinical evidence, to suggest the possibility of the joint playing a part in abortus infection, difficult though it may be to determine in exactly what way. It may constitute a site for local infection *via* the skin—perhaps, as Magnusson suggests, although it may not be the primary cause of a bursitis, it may, on the other hand, gain access and constitute a reservoir of infection. Local resistance being lowered by a series of predisposing causes, the joint may be rendered susceptible to invasion by the abortus bacillus; much in the same way, as various observers have suggested, it may be a secondary invader of other parts of the body, including the genital tract, following on some primary factor. Its isolation from cases of fistulous withers in horses and the association of these cases with *Onchocerca cervicalis* may be explained, perhaps, by the parasite providing a suitable media for secondary invasion by the organism, *Br. abortus*.

In Sweden big joints are often referred to as abortion enlargements, owing to the frequency with which their association with Bang's disease has been noticed. In America the same association has been significant enough to inspire an observation by the Special Committee on Bang's Disease in 1931 that " more evidence exists on the clinical manifestations of Bang's disease and the pathological lesions produced, especially bone and joint lesions." It has also been recognised that pain in the joints is a clinical symptom of undulant fever in man. The organism of Bang's disease has been isolated from typical cases of hygroma and bursitis by a number of American workers, and more recently Magnusson, working with the agglutination titre of blood and bursal fluid to Bang bacillus, in typical cases of bursitis, obtained results which appear to indicate the possibilities of serological examination of the joint fluids. Bang himself suggested, at a very early stage, that the organism associated with his name might be responsible for certain cases of hydrarthrosis met with commonly in herds badly infected with abortion. Clinical evidence of this kind has been accumulating for some time now, and whilst it may be indefinite at the moment it is at least significant enough to warrant a strong suspicion and to encourage further investigations by research workers and clinicians. Should this line of enquiry be fruitful of nothing more than a negative finding, it will at least do much to throw light on what is at the moment a very dark corner of bovine practice. On investigating these conditions in badly infected herds the owner is only too ready to submit an eloquent explanation of the high incidence of big joint in his stock, but my original observations have not been shaken. It has already been mentioned that the herds where one would least expect to find cases of joint abnormality in large numbers are just the herds in which they are found. They are, in many cases, the property of individuals priding themselves on their system of herd management and feeding, and in many cases the construction of the shippons and the appliances are of the highest order. Herds, the property of Agricultural Colleges, Public Institutions and commercial firms, where excellent supervision and management are maintained, appear to be rich in clinical material and, generally speaking, conditions such as these make it difficult to believe that such factors as dietetic error and hygienic irregularity play a very important part in giving rise to the large number of big knees and hocks seen in the herd. There will be general agreement that the incidence of chronic joint disease is more prevalent in the dairy cow and heifer than in any other type of bovine animal. This fact has been largely responsible for the hygienic theory, based on the assumption that because the cow is confined to shippon life she is more susceptible to factors associated with constructional irregularity. Whilst this may be so, it would be an error to suppose that these cases are seen only under such conditions; uncommon though they may be, definite cases are met with in bulls, stores, and what I may term range herds, to make it quite evident that hygienic factors cannot be the only essential predisposing cause. From my remarks concerning the type of herd affected one feels that ideal constructional arrangements could not be depended upon to dispose of the incidence.

Chronic joint disease in the young stock is a subject upon which I invite your observations, for the data on this point are of real importance and not purely of academic interest.

Cases of arthritis, bursitis, acute and chronic joint changes have been long recognised as a sequel or accompaniment to certain infectious diseases both in man and animals. In human medicine the theory of focal infection and its relation to pathological changes in the joint has been widely recognised and become an accepted theory responsible for the undulant waves of fashion resulting in wholesale tonsillectomy, molar extraction and surgical measures calculated to relieve infection of the internal ear, throat, sinuses, appendix and genito-urinary organs. In veterinary science we have been less credulous and content to regard genital infection only in a similar light—the diseased uterus forming the focus of infection responsible, particularly in such conditions referred to as polyarthritis, puerperalis and articular rheumatism (Hutyra and Marek) and pyæmic arthritis (Williams). What the mechanism of the association between joint and uterus may be we do not know, but clinically it does exist. Following an abortion, retained placenta or metritis, the cow may develop a swollen joint usually affecting one or both hocks and usually acute. If

calving is apparently normal, but associated with a retained placenta, the condition may not develop for a week afterwards. In many cases of big joint the onset may be so insidious that it is difficult to hold any attendant infection responsible, but if the history of the animal be carefully examined, in a certain proportion of cases a suspicious history may be elicited, giving a possible explanation. The theory of focal infection is based on such strong clinical evidence that it is apt to foster the belief that some focus of infection would explain many of these joint cases. It is not an entirely satisfactory explanation, since the majority of cases of uterine infection are not accompanied by any evidence of joint abnormality; therefore, in the absence of more direct evidence we must assume that the relation of joint to uterus, just as in the case of humans that of joint to teeth and tonsils, remains unsettled.

To leave a clinical subject without due reference to its therapeutic aspect would be to expose myself to much criticism in the discussion to follow. Naturally, it is of paramount importance to you as clinicians and from the fact that the treatment of such bone and joint lesions is notoriously difficult, you will be anxious to hear various views on the subject. So far as I am concerned, my competence does not entitle me to go into the question in this paper, but I look forward to hearing your views. Surgical interference, which is the only method of treatment indicated in chronic cases, is not an easy task at any time. Many of you will have experience of obstinate hæmorrhage resulting from evacuating a swollen hock where the result hardly seemed to warrant the risk of losing the owner's confidence. In spite of this, however, the only reasonable method of treatment is by surgical interference. The older methods of firing, blistering, cooling lotions, embrocations, and the layman's vinegar and goose grease do not appear to be attended with any degree of success. Aspiration, irrigation with salt solution, and injection of formalin in glycerine (2 per cent.), coupled with judicious exercise and attention to general health, appear to give good results.

Acute inflammation in the joint, with signs of constitutional upset, demands, of course, local and general treatment to reduce inflammation and alleviate pain and general symptoms, surgical interference being contra-indicated and unnecessary. It is safe to say that many a veterinary reputation has been sadly shaken over these cases, and clinical communications and an interchange of views would do much to improve the situation.

In conclusion, let me emphasise that it is not my intention to lead you to a false impression; the following points are merely put before you to stimulate a discussion and encourage your views:—

(1) Can you explain the frequent presence of big joints met with in the average dairy herd?

(2) Can you associate the incidence of such cases with Bang's disease?

Discussion

Mr. R. Hudson, of Retford, in opening the discussion, said: I do not find the opening of a discussion a very thankful task, for one has to be more or less critical. It is easy to be critical, not easy to be critical and kind, and difficult to be critical, kind and constructive.

I understand that Mr. Mullen wishes to associate the causative organism of contagious abortion in cattle with various conditions which we find in and about their joints, and for this reason he suggests that the title of the disease, *viz.*, contagious abortion, should be dropped and that of Bang's disease substituted. I fail to see the need for such an alteration, for we have not yet been shown that these conditions have anything to do with Bang's bacillus. Further, although abortions due to other causes are rare, they do sometimes happen and may lead to secondary events similar to those of contagious abortion due to *Br. abortus*.

At the outset our essayist informs us that his ideas are theoretical and put to us as suppositions which one may be excused for thinking is rather a pity, seeing that he comes from an institute which should have enabled him to come with proven facts in support of his contention that *Br. abortus* sets up joint lesions.

The author is severely critical regarding the past work on bovine osteology and joints, but it is doubtful if it presents, or will present, a very rich field for investigation owing to the short life and use of the animal concerned. As a country practitioner I cannot agree that the incidence of bone and joint diseases in bovines ever does or ever will call for the same amount of research and treatment as that of equines, for reasons which must be obvious.

I am glad that human surgeons are also remiss in their elementary classifications, but even they may be excused when we know how difficult it is to draw hard and fast lines through the simplest conditions. I do not understand the essayist when he states that veterinary clinicians speak of joint disease as bursitis, synovitis, arthritis, etc., as loosely indicating any inflammation in a joint, for I am sure that they do not. They show more regard for the actual condition, even in country districts. Imagine, for instance, any country practitioner calling a bone spavin a synovitis, or a bog spavin (without lameness) an arthritis. If so critical, why go to the layman and borrow the title "big joint" and use it for a convenient description? "Big joint" conveys little to me.

To follow clearly the essayist's description of big joint is difficult, for he appears to have mixed together the effects of simple bruising and severe septic conditions and then finished up with them as a huge hygroma. The essayist might have classified the conditions he has met with which he thinks may have followed *Br. abortus* infection. Would he accept the following?

(1) Subcutaneous swellings due to hæmorrhage in the subcutis.
(2) Bursal swellings in connection with tendon sheaths.
(3) Inflammation of the joint capsule and periarticular tissues.

(4) Arthritis.
(5) Synovitis.
(6) Ostitis and periostitis.

I cannot agree that the stifle joint is acutely inflamed. Most frequently it is of slow onset with no sign outwardly of acute inflammation even when lameness is very marked. Again, in summarising clinical details I cannot agree that in the hock and knee joints we have a chronic bursitis only; is not the author confusing bursitis and arthritis? I should like to know if the fluid the author describes is true joint synovia, bursal synovia, or the fluid from an abscess below the skin.

Bacteriological findings from material are disappointing and soon passed over, and I must confess that I was looking forward to some definite result. I do not think that the isolation of *Br. abortus* from milk and other discharges is particularly difficult, and it has been isolated from a fetlock lesion, so why has it not been detected here? Serological tests will not carry much weight as far as Bang's disease is concerned, for may not any body fluid from an infected animal give a reaction? In secondary infections of joints I believe that it has often been difficult to find organisms in the interior, but usual to find them in the periarticular tissues—nature's provision against direct infection: why has the essayist failed to find them there? The pathological changes that have led to ankylosis and rarefaction and not caused lameness are difficult to understand.

Failing to find the actual cause, the author falls back on predisposing causes. Dietetic causation does not appeal to him, but does he not miss the point that a big, fat, overfed animal may bruise itself more easily than a small thin one; further, may not the feeding of a high protein ration predispose to abscess formation and infections?

Unlike the essayist, I look to find joint troubles in animals kept under so-called good hygienic conditions, with concrete floors, concrete mangers, short tie-ups, etc. Recently in a model cow-house I saw three cows fall on their sides when turned loose. They fell with such force that I wondered they did not break their ribs.

"To attempt to review the bacterial flora of joint infections would be of doubtful value here," says the author, and that "no definite organism or group can be incriminated." Can we assume that they were absent? We find septicæmia, pneumonia, muscle abscesses, laminitis, pleurisy, peritonitis, etc., often as secondary to septic uterine and mastitis conditions. Why should joints escape? Clinically the connection between a septic uterus and a septic joint is obvious enough and if worked out the bacteriological proof should not be lacking.

With regard to treatment, if we are to accept the theory of *Br. abortus* infection, treatment might be based on that and vaccine tried. Has the essayist anything to say on that? Surgical procedures appeal more to me. I open hygroma and serous abscess with a free incision, remove blood or lymph clots, plug the opening and bandage with a wide bandage. The aspirator is useless as it fails to remove clots. Large hygroma are better bandaged; this assists the contraction of the skin, lessens the risk of sepsis and hastens the healing process. Where the joint is affected I have rarely found any synovial distension; therefore one is not called upon to aspirate. I have found these cases to be best treated by blisters of hydrarg.-perchloride and lard (1 in 12), repeating until sufficient counter-irritation is obtained. Internally I use sodii. sal., antifebrin and pot. nit.

My answers to the questions at the conclusion of the paper are as follows:—

(1) Hygroma of the knee and the various serous abscesses on the outside of joints are due to bruising by contact with hard floors. Inflammations of the interior and exterior of joints are often due to secondary infections from a septic uterus, vagina, or udder.

(2) Yes, but only because Bang's disease predisposes to septic conditions of the genital canal, from which organisms pass into the blood stream and may settle anywhere.

After Mr. Hudson had opened the discussion the President (Mr. A. J. Hines) thanked Mr. Mullen very much for his paper and went on to say that the subject was one of which he was afraid they were rather ignorant. Too little attention had been paid to the pathology of the bovine joint in the past, lameness in this animal not appearing to have the same importance as in the horse, and again they were not the best animals to examine for lameness.

Speaking for himself, he had not noticed any excessive number of actual big joints although he practised in a district where abortion was rife. It was, however, true that abrasions of the hock, almost always on the outside, were common; in some herds 90 per cent. of the cows might show them. In this connection he thought that in a herd in which the animals had been subjected to the agglutination test, as many cows which were negative to the test would show joint troubles as cows which were strongly positive: if the connection between joint lesions and Bang's disease were proved this would hardly be the case.

In his opinion, these joint lesions were almost always traumatic in origin, most commonly due to bruising on cement floors. They might be very common in a herd during the winter, and then in the summer, when the animals were at grass, fall to a very small number.

A common cause of lameness was "foul in the foot"—a pedal arthritis; had this any connection with Bang's disease? He thought it curious that Mr. Mullen should have examined fluid only to find it sterile, particularly if the condition were due to *Br. abortus*, and at the same time he should be glad to have from the essayist some details of the serological examination, which was said to have given more promising results.

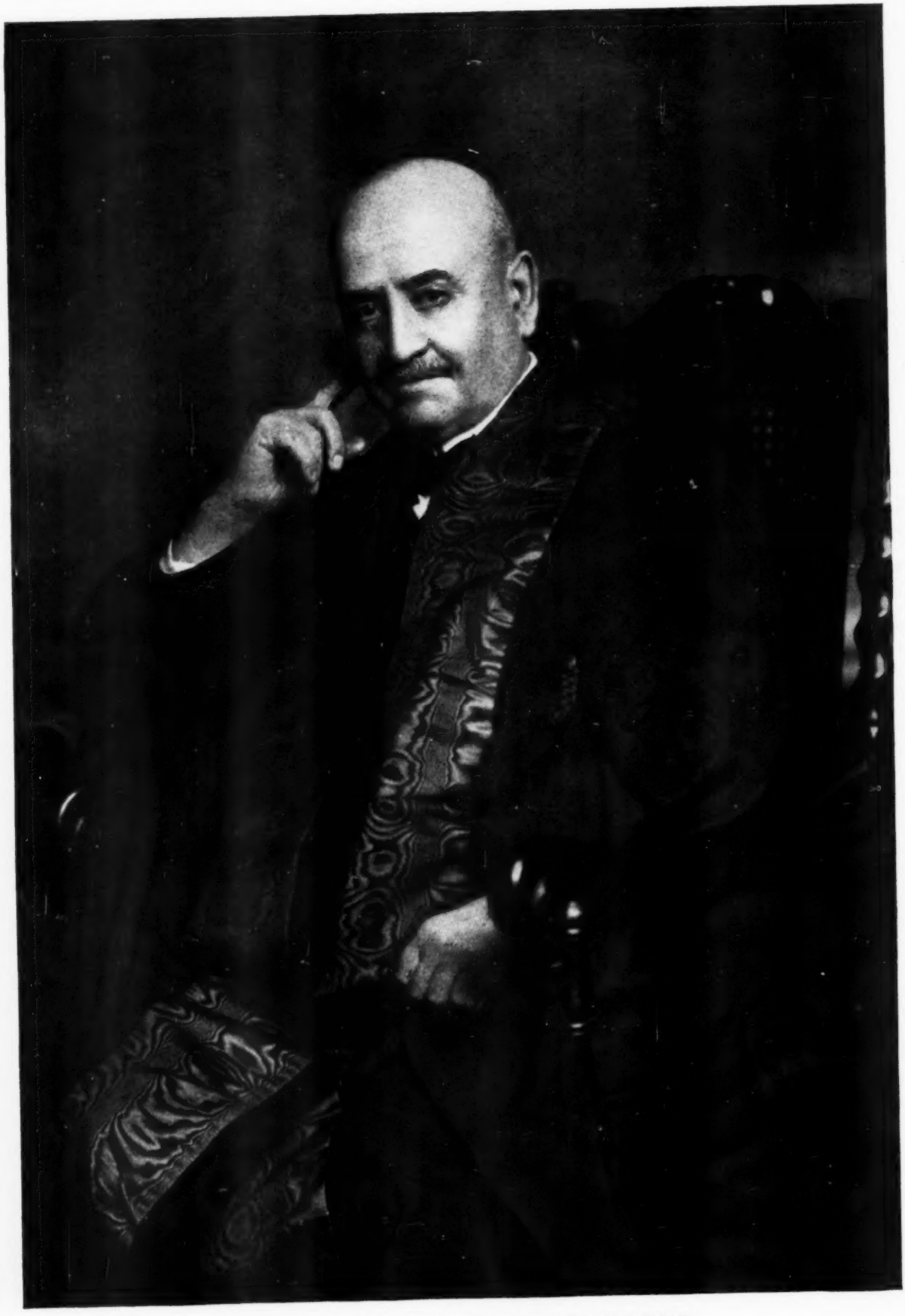
In conclusion, it seemed to him that the whole point was that Mr. Mullen had failed to prove the connection between big joints and *Br. abortus;* he himself did not think that there was any definite connection.

Mr. Swaby remarked that there had been an increase in the number of cows with big joints in proportion to the erection of new, modern cow-houses under the Milk and Dairies Order, and he felt sure that in that they had the commonest cause of the trouble.

Mr. Matthews said that he had found the paper very interesting, but that he had very little to contribute to the discussion. It did not appear to him that there was any proved relationship between Bang's disease and the incidence of big joints. There was no doubt that contagious abortion had increased tremendously, but had big joints?

There was, of course, always the possibility that that bruising might be a predisposing cause to infection with *Br. abortus.*

Mr. Porter Smith agreed with previous speakers that the faulty construction of the cow-shed was responsible for the great majority of the cases, adding that overcrowding was far too common on many dairy farms.



THE LATE MR. E. ALFRED WEST, F.R.C.V.S.

Mr. Eaton thanked Mr. Mullen for an interesting paper on a condition which was of decided economic importance, but said that in the absence of definite bacteriological findings it was difficult to attribute it to infection with *Br. abortus*. Sore hocks were very prevalent in modern cowsheds, and might be present in the majority of cows. They occurred, however, in bullocks under similar conditions, whilst they might be absent in a herd under range conditions even when abortion was rife.

Mr. Lang, in concluding the discussion, said that he too agreed that in the great majority of cases the cause was mechanical injury.

THE REPLY

Mr. Mullen, in reply to the discussion, said: In view of Mr. Hudson's criticism I feel more inclined than ever to agree with those who have commiserated with me in my task of writing a paper on any aspect of joint and bone disease in animals, let alone the particular angle which I have tackled. Nevertheless, I am pleased that there has been a good reaction to the stimulus thrown out to arouse and promote a good critical discussion. The duty of an essayist on such occasions is not to present a thesis but to encourage an exchange of opinions, contrary though these may be to the essayist's personal view.

Mr. Hudson has brought me to task over the question of change of title of contagious abortion to Bang's disease; that, however, is not of my doing; it has merely been indicated that future references to the major complaint will employ the newer term in places of the better-known contagious abortion. His assertion that diseases of the bovine joint possess no value for further investigation is surprising; my impression is that any factor detracting from normal functioning of the dairy cow is worthy of investigation and this type of animal is with us quite long enough to make the study worth while.

My failure to deal more fully with bacteriological findings has given rise to much criticism from the opener of the discussion and various speakers. The suggestion that this is owing to a lack of bacteriological flora in such cases is definitely wrong. A variety of organisms have been isolated from joints and comprise Streptococci, Staphylococci, *B. coli* and diphtheroids, and whilst I also have isolated some of these I have not been content to regard them as the causal factor, rather have I looked upon them as contaminants owing to the state in which I receive many of my specimens. The fact remains that my experience of cultural examination of joint fluids—and by that I mean synovia and bursal fluid—has been disappointing. It is a common experience amongst pathologists to find the synovial fluid sterile in pathological joint conditions—perhaps the biochemical properties of the fluid exert an inhibitory effect on bacterial growth. Animal inoculation of synovia, bursal fluid and periarticular tissue extracts has given indefinite results. In many cases whilst the injection has failed to produce typical lesions in the animal's spleen it has in some cases produced agglutinins in the guinea-pig's serum—this is a finding which I have been unable to appreciate as yet. My mention of the possibility of serological examination of bursal fluid from cases of bursitis giving good results has been seized upon by several speakers; my suggestion was based on recent work by Magnusson and my experience has confirmed those findings—in spite of this, however, I am not accepting these results as positive of abortus infection in the absence of cultural and biological evidence. Further work will have to be carried out along these lines before an assertion can be made. So far, I have been unable to demonstrate similar results in fluid aspirated from normal joints in animals negative to the routine agglutination test.

Mr. Hine's statement concerning the absence of joint abnormality, by which he means hygroma of the knee, in an area rampant with Bang's disease, is refreshing; he does, however, state that he experiences a large incidence of abnormal hock joints.

Mr. Porter Smith, Mr. Eaton and other speakers referred to the common theory of traumatism from overcrowding, and mechanical injury from hard floors and irregular construction. It is as I expected; nevertheless, the discussion has given me food for thought and many interesting points have been forthcoming to influence my investigation.

FOWL TYPHOID IN BABY CHICKS

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In Palestine as well as other countries *Salmonella gallinarum* is known to be the ætiological agent of epidemics of fowl typhoid among adult birds. It is usually assumed that *Salmonella gallinarum* affects adult birds only, and that baby chicks, although susceptible to artificial inoculation, possess a certain degree of resistance to the natural infection.

Rettger and Koser[1] successfully inoculated three-day-old chicks, but they were of the opinion that the disease does not occur in baby chicks under natural conditions. Doyle[2] confirmed Rettger and Koser's observations, and stated that although hundreds of autopsies were performed on baby chicks sent to the Ministry Laboratory in England, and the fermentation properties of the organisms isolated studied, not a single case of fowl typhoid in baby chicks was recorded. Truche[3] is of the opinion that in France *Salmonella gallinarum* attacks adult fowls only.

Evidence as to the existence of fowl typhoid in baby chicks is supplied by several workers. Taylor[4] recorded an epidemic of fowl typhoid in adult as well as baby chicks in California; chicks ranging in age from five days to several weeks being involved. Te Hennepe (cited by Doyle) reports that fowl typhoid is a common cause of mortality in baby chicks in Holland. Baudette[5] isolated *Salmonella gallinarum* from baby chicks in New Jersey, coming from widely separated centres. Beach and Davies[6] also recorded an epidemic of fowl typhoid in baby chicks in California.

It is the purpose of this paper to report outbreaks of fowl typhoid in baby chicks in Palestine, as well as to bring some additional epidemiological evidence as to the mode of transmission of this infection.

Outbreak No. 1.—In March, 1932, we were called upon to investigate the cause of an unusually high mortality among baby chicks. The owner purchased the majority of his hatching eggs from the farm of Mr. F.; but some of his own eggs were included in the hatch. The chicks were brooded in a well-constructed brooding house, with concrete walls and floor. Clean woodshavings were used as bedding material. The chicks were fed the usual mash, mixed on the farm. Sickness and mortality started within the first week after hatching.

Two dead chicks were autopsied and cultures taken from the liver and heart blood. In one chick the liver was enlarged, pale and friable and the spleen slightly swollen. The lungs, kidney and intestinal tract appeared normal. The second chick presented a similar *post-mortem* picture, except that the kidneys also were swollen and pale. After incubation for 24 hours at 37° C., pure cultures of an organism of the Salmonella group were found on the plates.

About this time the owner brought to the laboratory ten additional dead chicks. Two were discarded as unfit for bacteriological examination, the remaining eight were autopsied and cultured. The *post-mortem* changes did not differ materially from the first two chicks examined, except that in four the yolk was markedly unabsorbed. Cultures were made on McConkey plates from the liver and unabsorbed yolk. After 24 hours' incubation, the plates, streaked with liver material, showed the same type of colonies noted before. In two cases the unabsorbed yolk material yielded the same type of colonies. Some of the colonies were transferred to double sugar media and a more detailed study made.

The organism was a small, Gram-negative, non-motile bacillus. Its growth on the double sugar media was characteristic of the Salmonella group, but it failed to produce gas. A detailed study of the fermentation properties was made in a 1 per cent. peptone water medium with Andrade indicator to which was added 0·5 per cent. of the requisite sugar. The medium was distributed in test tubes containing a small inverted tube to serve as a gas trap. To prevent hydrolysis of the sugar, stock solutions (1-20) were prepared separately, autoclaved, and the sterile sugar solution added to the medium by means of a sterile pipette. Series of these tubes were then inoculated with (1) a suspension of the organism isolated from the baby chicks; (2) broth cultures of known strains of *Salmonella gallinarum* isolated in this laboratory on different occasions from adult fowls. The tubes were incubated at 37° C., and the results read after 24 and 72 hours.

Organism.	Dextrose.	Lactose.	Saccharose.	Maltose.	Xylose.	Dulcite.	Mannite.
Baby chick	A	O	O	A	O	A	A
S. gallinarum, No. 13	A	O	O	A	O	A	A
S. gallinarum, No. 16	A	O	O	A	O	A	A
S. gallinarum, No. 18	A	O	O	A	O	A	A
S. gallinarum, Arab chicken	A	O	O	A	O	A	A
S. gallinarum, B.M.	A	O	O	A	O	A	A
S. gallinarum, K.Y.	A	O	O	A	O	A	A

A = acid. O = negative.

It is to be noted from the table that the fermentation properties of the organism isolated from the baby chicks, corresponded to the typical *Salmonella gallinarum* isolated from adult birds.

Jordan and Harmon (cited by Mallman) demonstrated that sodium d-tartrate media containing phenol red differentiated *S. ærtryke* and *S. schottmuleri* by colour change due to differences in pH. Mallman,[7] using a procedure similar to that employed by Jordan and Harmon, showed that the sodium salts of d-tartaric and of mucic acid differentiated *S. pullorum* from *S. gallinarum*, *S. pullorum* giving an alkaline reaction with sodium d-tartrate, and an acid reaction with sodium mucate, and *S. gallinarum* an acid reaction in the first media, and an alkaline reaction in the second. Using these salts on a number of strains of both organisms over a period of three years, Mallman found no variations or exceptions to the above reaction.

We have used this procedure, employing sodium d-tartrate media only, on the baby chicks' strains as well as those from adult fowls. The reaction was identical for all strains and corresponded with that of *S. gallinarum* as reported by Mallman. It is evident, therefore, that the baby chick strain is a typical *S. gallinarum*.

The adult birds on the affected farm were not known to suffer from fowl typhoid at any time. The owner of this farm had sold hatching eggs to another farm, which was visited, and the hatch was found to be thriving well. On the other hand, Mr. F., who had sold the majority of the eggs to the affected farm, stated that his adult stock had been tested and that fowl typhoid carriers had been found among them.

Outbreak No. 2.—In April we were informed of an epidemic in baby chicks in T.A. The place was visited and the following information secured. The owner had purchased all his hatching eggs from Mr. S. The chicks were brooded in the owner's house under satisfactory sanitary conditions. Sickness and mortality started within the first week after hatching. Two dead chicks were *post-mortemed* and the liver and heart blood cultured. The *post-mortem* picture corresponded to that seen in Outbreak No. 1. After 24 hours' incubation, Salmonella-like colonies were found on the plates. Mr. S. (from whom the eggs were bought) was then visited, and he gave us the name of another farmer who had bought hatching eggs from him. The place was immediately visited and the owner stated that his chicks also were dying. Two chicks were autopsied, cultures taken from heart blood and liver, and the same type of culture obtained.

The fermentation reactions of these cultures were the same as those of the previous one, except that they failed to ferment maltose. These cultures, therefore, could be considered a variant of either *S. pullorum* or of *S. gallinarum*. The Mallman procedure was then resorted to, and the reaction obtained with the strains isolated from Outbreak No. 2 was characteristic of *S. gallinarum*.

It is worth noting that in Outbreak No. 2, there were two widely separated centres of infection, the common elements being the source of eggs. It is also significant that in both places the same strain was obtained.

MODE OF TRANSMISSION

Rettger[8] has shown that *S. pullorum* was transmitted through the egg. Beaudette[5] isolated *S. gallinarum* from baby chicks ranging in age from one to five weeks; in one case the organism was isolated from the unabsorbed yolk of a five-weeks-old chick and in another from the pathological ovary of an adult hen. The author, therefore, suggested that the infection might be transmitted through the egg. Beach and Davis[6] demonstrated that *S. gallinarum* may produce an acute highly fatal disease in young chicks and a chronic infection of the ovaries of hens; death among the chicks from *S. gallinarum* infection started when they were 60 hours old. Doyle[9] isolated *S. gallinarum* from the ovary of a typhoid carrier adult hen, but 140 eggs from typhoid carrier hens were examined with negative results.[2] Doyle[2] suggested that although it is quite possible that the eggs may be occasionally infected, it is probable that chicks contracted the disease from the same source as the adult, *i.e.*, from insanitary surroundings.

. . . . .

In the outbreaks reported above, the following points are of interest:—

(1) The chicks were in all cases brooded under sanitary conditions and it could not be suggested that the infection was contracted from the surroundings. Moreover, in case No. 1 the adult birds on the affected farm did not at any time suffer from fowl typhoid infection and eggs purchased on this farm and hatched on another farm did not give rise to infection. On the other hand, the farm from which the eggs were bought was found to have fowl typhoid carriers and the eggs purchased from this farm and hatched in another farm gave rise to fowl typhoid infection in the hatch.

(2) In the second outbreak an epidemic of fowl typhoid among baby chicks was discovered by obtaining from the owner of the suspicious eggs the name of another purchaser of his eggs.

(3) *S.gallinarum* was isolated from the heart blood and liver, and from the unabsorbed yolk of a one-week-old chick.

(4) The same *S. gallinarum* variant was obtained from two widely separated centres, the only thing in common being the source of eggs.

These facts indicate that the outbreaks reported above were in all likelihood introduced by the eggs.

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4 Taylor, W. J. *J. Amer. Vet. Med. Asso.* (1916), lix, 35-49.
5 Baudette, F. R. *J.A.V.M.A.* (1925), lxvii, 1-5.
6 Beach, J. R., and Davis, D. E. *Hilgardia.* (1927), xii, 411-424.
7 Mallman, W. L. *Proc. Soc. Exp. Bio. and Med.* (1931), xxviii, 501-502.
8 Rettger, L. F., and Scoville, M. M. *Jour. Inf. Dis.* (1920), xxvi, 217-229.
9 Doyle, T. M. Soc. Poultry Breeders' Assoc. (1925), xxi, 23.

LONDON HORSE SHOWS

"It is obvious that the cost of these shows is weighing heavily upon the resources of the societies concerned," says the *Farmer and Stock-breeder.* "The problem that has to be faced is whether expenses can be cut without detracting from the usefulness of the exhibitions; and the history of recent years suggests that this might be accomplished. We hear much in these days about rationalisation, and here is a case in which it might be applied with advantage. Better a crowded and intensive programme for two days than three days of leisurely proceedings that suggest anything but a serious business undertaking. The atmosphere in which an exhibition is held has its reactions quite apart from the saving in expense that may be affected."

* * * * *

It is over fifty years since the first cargo of frozen meat was brought from Australia to England, and the pioneer of that form of enterprise—Mr. Andrew M'Ilwraith, Salcombe—died recently at the age of 88 years.

The Veterinary Record
December 10th, 1932.

PUBLIC OPINION AND UNQUALIFIED PRACTICE

THE term "quackery" covers such a multitude of diverse practices that an attempt to estimate the number of its exponents in the veterinary field in England and Wales seems to us a particularly hazardous venture. Yet, however we may view the likelihood of accuracy of the figure of 10,000 recently put forward in a public address by a prominent veterinarian, there can be no question that at least the incidence of unqualified practice, as between town and country, has undergone a marked change in the present century. The country practice, in earlier days inevitably beringed with "quacks," is now happily somewhat less severely beleaguered, but in this year of grace it is equally certain that the very existence of the urban practitioner is menaced by the competition, both organised and sporadic, of hordes of untrained individuals whose activities, even when genuinely charitable in motive, constitute a veritable danger to the small animals subject to their ministrations.

Well-instructed public opinion, if such were available, would be the natural, as it would be the most potent, agent for the removal of the anomaly of an increase of unqualified practice side by side with a general acceptance of higher humanitarian standards than formerly prevailed. The history of human medicine in this regard, however, provides but an unhopeful analogy.

Since the earliest days of its representation by an organised body—then the Provincial Medical and Surgical Association—the medical profession in this country has waged unceasing war against quackery, but that the public are still the most stubborn opponents of their own protection is revealed with distressing clarity in what is probably the most recent contribution to the consideration of this subject.* Indeed, as late as 1930, Dr. Alfred Cox, the then Secretary of the British Medical Association, recently retired, informed the Annual Representative Meeting that he did not believe it was possible to suppress the desire of human nature for quackery, and almost unanimously the assembly approved his opinion as to the impracticability of any attempt to put down unqualified practice by means of legislation. Thus it is that, since the year 1840, the numerous Bills proposed or supported by the Association have not contained clauses designed to forbid unqualified practice.

On the other hand, the veterinary profession, in the Irish Free State Veterinary Surgeons Act of 1931, secured the insertion of a number of Clauses relating to the prohibition of practice by unqualified persons. The success thus achieved by the veterinary profession must, despite the collateral accomplishment of the dental fraternity, have been as surprising to our medical colleagues as it was gratifying to us. To be fore-warned is to be fore-armed, however, and the Irish Veterinary Council will not under-estimate the importance of the statement made at the Representative Meeting of 1930, that in those countries where unqualified practice is forbidden by law, it nevertheless flourishes. In proof of their awareness of the situation, the vigorous prosecution of offenders which the year 1932 has already witnessed shows the Irish Council to be fully alive to the dangers of the pitiable public complacency in this regard.

The importance of the veterinary aspect of this matter receives emphasis from the warning which Principal Hobday gave—in person to the citizens of Burton,† but actually to a wider audience—lest the process of immunisation against canine distemper should pass beyond the confines of the veterinary profession, with results inevitably disastrous to the unfortunate animals concerned. It is reassuring to know that the whole question of unqualified practice in this country, from the veterinary aspect, is being considered by a committee of the "National," with a view to strengthening the protection afforded veterinarians under the Veterinary Surgeons Act.

* History of the British Medical Association, 1832-1932. Ernest Muirhead Little, "Quackery." pp. 273-277.

† Address to the British Kennel Association, November 4th, 1932.

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Clinical Communications

A CASE OF FŒTAL RETENTION

R. H. SMYTHE, M.R.C.V.S.
Camborne

The subject was a black Chow brood bitch, which had previously given birth to four large, healthy litters.

The history given by the owner was that the bitch had been mated twenty-one weeks before, and until the expected date of parturition had exhibited the normal signs of pregnancy. At the end of the gestation period she had appeared ill, no puppies had arrived, and since then the bitch had gradually wasted and turned rusty in colour. On palpation, the abdominal muscles appeared tense, and as several hard masses could be felt in the cavity, it was decided to operate. In preparation, the bitch was starved for twenty-four hours and the bowel emptied by enemata. Anæsthesia was carried out with chloroform following upon the hypodermic injection of three-quarters of a grain of morphia.

An incision was made, commencing at the umbilicus and extending half-way to the pubis. The left horn of the uterus was brought through the wound, incised, and two dead puppies of normal size were removed, and the uterus sutured. As more puppies could be felt, an attempt to repeat the procedure was made in the other horn, but it was found impossible to raise it or bring the puppies through the incision. By stages, the incision was extended in a forward direction to the Xiphoid cartilage, producing a wound ten inches in length. It was then seen that the two remaining puppies were extra-uterine and were only partially covered by membranes; in places the fœtal skin was exposed and cast-off hair was free in the abdominal cavity. On exploring in a backward direction, it was found that the right cornu had partially disappeared and terminated in a solid cord made up of a complete double twist. It was then obvious that rupture of the horn had followed upon torsion, with liberation of the fœtus into the abdominal cavity.

The next fœtus, after withdrawal through the incision, was found to be adherent to the stomach and small intestines; a triangular piece of mesentery, four inches in length, was unavoidably cut away from the small intestines. The edges of the mesentery were sutured together. The remaining fœtus was firmly adherent to the capsule of the liver, from which it was freed by blunt dissection.

The twisted portion of horn was ligatured, excised, inverted and sutured. The uterus was swabbed with a 1 per cent. solution of iodine and about one ounce of the same solution was poured into the abdominal cavity. The peritoneum and deep layer of muscles were united with a continuous catgut suture and the skin and superficial muscles were joined together with interrupted sutures, a continuous skin suture completing the operation. The sutures were removed on the sixth day, healing having occurred by first intention. The bitch was returned to the owner nine days after the operation.

* * * * *

NOTES ON HYPOCALCÆMIA AND METRITIS

F. J. DUNNING, F.R.C.V.S.
Stellenbosch University

If individuals kept their experiences to themselves and did not allow them to receive the light of day, our practical knowledge would advance but slowly and we should not be so well able to discriminate between good and bad practice. I am always grateful to the numerous writers in the *Record*, from which source much useful information has been obtained, and I therefore trust that a few notes from overseas may not be without interest by way of comparison.

Hypocalcæmia or milk fever in South Africa has until recently been treated by udder inflation, and personally I have never seen a death in an animal so treated which could be attributed directly to the disease. Many stock-owners are now quite accustomed to inflating the udders without seeking professional assistance, therefore one may accept it that in their case recovery is the rule. In spite, however, of the utmost care, a percentage of cases occurs in which either a subacute or chronic mastitis results. Often when enquiring into the previous history of a damaged udder one learns that the cow was a milk fever case treated by udder inflation. During the last two years, when opportunities occurred, I have been trying out both calcium chloride and calcium lactate. My experience has been that when given intrajugularly, even very slowly, they cause violent tremblings, muscular twitchings, palpitation and threatened collapse, and further introduction often has to be discontinued at 60 c.c. When divided up and introduced in different sites subcutaneously, both salts cause swellings with either necrotic abscesses or persistent indurations, which can only be removed by successive blisterings. Stimulated by recent literature, I have lately turned to calcium Sandoz, with such success so far that I am sure we are now definitely in a position to go one better than our unqualified competitors and enhance professional reputation. We must maintain the lead. My present method is to make up 600 c.c. of a 5 per cent. solution, of which 200 c.c. are given very slowly intrajugularly, usually resulting in an

immediate return to consciousness, and expressions of surprise and appreciation from the owner. The balance is then given subcutaneously—200 c.c. on each side over the ribs, slowly, with an assistant massaging to disperse it. All operations are conducted with the usual thorough aseptic precautions and liberal iodining. Up to the present I have reinforced this treatment by semi-inflation of the udder to suppress milk secretion, but hope to dispense with it.

The intrajugular injection is made by a 50 c.c. syringe, and 50 c.c. of blood are withdrawn for every 50 c.c. thus introduced. Whilst the number of cases treated so far is few, yet I am encouraged to continue, as neither my intrajugular nor subcutaneous inoculations have been accompanied or followed by any suspicion of undesirable results.

Observations made here show that Jersey cows are far more liable to milk fever, whilst Frieslands are prone to retained afterbirth. I have never yet had to remove an afterbirth from a Jersey.

A close, sultry, muggy day is often the deciding factor in bringing a susceptible Jersey down with milk fever. Hypocalcæmia is seen occasionally at various times during the lactation period and responds to the same treatment.

Concerning retained afterbirths, experience warns me against too precipitate direct action. If there are numerous attachments it is very difficult to remove them before the third or fourth day and even when accomplished it leads to severe and long continued metritis. Unfortunately, if one waits longer than the fourth day constitutional disorders occur and also the neck of the womb has to be forcibly dilated.

My favourite douching solution is permanganate of potash added to fairly warm normal saline, which is non-irritating and has an additional advantage in the colour indication when sepsis is removed. A slow intraspinal injection of 5 to 7 c.c. of 2 per cent. cocaine solution is given before operation and under its influence a quiet cow may even feed or cud oblivious of what is taking place, while there is none of that back arching and straining which previously was so disquieting and distressing. As a preliminary the arm is well smeared with carbolic oil and the womb well douched, not syringed, before attempting removal, and it is found that a fairly warm solution will relax the walls of the womb and make all manipulations much easier.

It has been my experience, unfortunately, that all cases of retained afterbirth are succeeded by a protracted suppurative process often interfering with fertility. Such cows really require expert professional attention to induce resolution, but this is seldom sought, on account of the expense involved.

TETANUS IN A BOVINE

J. C. TAYLOR, M.R.C.V.S.
Beccles, Suffolk

Subject.—Red yearling steer (Red-poll—Shorthorn cross) in store condition.

History.—On the night of November 16th, 1932, the owner noticed that the animal was slightly "blown" and moved very stiffly. He had been off feed since that morning. I was sent for on the following morning, being informed by the messenger that the "bullock was 'blown,' stiff, seemed very excitable, and that they had tried to drench him, but could not."

Symptoms.—I found the steer in a box. He walked very stiffly, with forelegs forward—going on the heels, like a horse with anterior laminitis. There was marked tympany in the left flank. Respirations were shallow and accelerated. Temperature 102·8° F. Heart beat tumultuous. The mouth was very firmly closed, it being impossible for the united efforts of two men to force the jaws apart. Salivation was seen. The eyes were staring, the head extended on the neck, and the tail elevated, being carried on one side. (Rumination or defæcation had not been observed by the owner for 24 hours.) The animal was extremely nervous, and resented being handled.

Prognosis.—As it was impossible to feed the animal or administer medicine, treatment of any sort was deemed useless, and slaughter was arranged for next morning.

Result.—The beast died during the night.

Remarks.—This is only the second case of tetanus in a bovine I have seen in 12 years. The disease is common in horses and lambs in this area, and is seen at times in pigs following castration.

There were no visible wounds on this bullock, and he had been castrated nine months previously. He had been running out by day with other yearlings, and in a yard by night. There is a quantity of barbed wire in the meadow.

No cases of tetanus in horses, or other stock, are known to have occurred on this farm for the past 20 years.

* * * * *

RUPTURE OF THE DIAPHRAGM IN THE HORSE

J. C. TAYLOR, M.R.C.V.S.
Beccles, Suffolk

Subject.—Hunter, chestnut gelding, eight years old, 17 h.h. In hunting condition.

History.—This horse, whilst being jumped over "made-up" fences at exercise on February 21st, 1932, fell awkwardly at a fence, landing on the right shoulder, but not somersaulting. He got up, appeared "blown," but not lame, and was led quietly to his stable, about one mile away. He seemed dull, would not feed, and showed no marked symptoms of pain. However, this being a valuable animal, and an excellent performer in

the hunting field, the owner sent for me at once.

Symptoms.—On arrival, the horse was seen standing up; he moved over in the box with great difficulty, showed loss of control over both hind limbs, seemed stiff in the loins, showed bruises and abrasions on the right knee, forearm, and shoulder, and a small cut on near hind fetlock.

Respirations were very rapid and abdominal in character, rather resembling those of a horse with pleurisy. The pulse was very slow and almost imperceptible.

Temperature was subnormal. The visible mucous membranes were of a dirty-yellowish colour.

Diagnosis.—Internal injuries were suspected, in addition to bruises and concussion of the spine. As rupture of the diaphragm was regarded as a possibility, careful auscultation of the chest and abdomen was carried out, but no abnormality in the chest could be definitely detected, beyond increased bronchial sounds. Peristalsis could be heard in both flanks. A gloomy prognosis was given to the owner.

Treatment.—A sedative hypodermic injection was given and the external injuries were dressed. The horse was rugged-up and well bedded down in a clean, warm box.

Course.—The owner reported by telephone that the horse was easier, and in the morning he reported that he had eaten a bran mash and drunk some "chilled" water, but had not lain down. Arrangements were made for slinging, if necessary. Later, on the same day, the owner telephoned that there was a change for the worse; and on arrival I found the horse down, in great pain, unable to rise, and sweating freely. On making a further careful examination, I found the animal moribund, cold (although sweating), struggling feebly, but unable to rise or raise his head. The pulse was imperceptible, the breathing greatly accelerated, and expression very anxious. He appeared easier when turned on the left side. It was decided, in view of the impossibility of recovery, and for reasons of humanity, to destroy the horse.

As the buildings were wooden, and horses in neighbouring boxes were likely to be terrified by a shot, I destroyed the animal by puncturing the aorta *per rectum*. This method is simple, obviates noise and mess, and can easily be carried out in such circumstances, or on board ship, etc.

Post-mortem Findings.—In addition to external wounds, and extensive bruising of the right shoulder region, a rupture of the tendinous centre of the diaphragm, towards the left side, was found. Portions of the stomach and small intestine were found in the thorax. Practically the whole of the left lung was collapsed. There was some internal hæmorrhage from the mesenteric vessels, and a quantity of blood-stained fluid was found in the chest.

Apparently the jaundiced condition of the visible mucous membranes was caused by pressure on the small bowel holding back the flow of bile, as the liver itself was in a normal position. The spine was dissected out, but no lesions discernible by the naked eye were found in the skeletal canal, in the cord itself, or its membranes.

It is of interest to note that none of the classical symptoms of ruptured diaphragm were present in this case, *i.e.*, "sitting up like a dog," etc.

Abstracts

[Dressing of Wounds. Bankart, A. S. Blundell, *et al. B.M.J.* Nos. 3749-50-51.]

"Give Nature a chance" is the text of a series of communications on the subject of the dressing of wounds published in three successive November issues of the *British Medical Journal*. Mr. Blundell Bankart effectively initiates a campaign against the common practice of the daily dressing of wounds with the bold observation that "it is probable that in the aggregate more unnecessary suffering is caused by the senseless dressing of wounds than by all the major procedures of surgery. These last are at least mitigated by the appropriate use of anæsthetics and anodynes."

There should, he asserts, be a wider realisation than at present pertains amongst medical men of the fact that in the absence of virulent infection (which is easily recognised) the decomposing discharges from a granulating wound, although teeming with saprophytic organisms and stinking, are nevertheless quite harmless on the surface of the body; they are not absorbed to any appreciable extent from an open wound, and they are the best possible culture medium for growing cells. The principle of non-interference is nothing new. "Healing under a scab" was described in all the older text-books of surgery as a normal process of healing, and it was an essential part of the process that the scab should not be disturbed. The surgeon can greatly facilitate the process by providing "the scab" in the form of a large plain gauze and wool dressing. It is obviously essential to the success of "maggot treatment" that the wound should be left undisturbed for relatively long periods, but as the dead and putrifying material thereby removed is not necessarily harmful—and may even be beneficial—there does not seem to be much point in employing maggots to remove it; moreover, asks Mr. Bankart pointedly, how much of the success of this form of treatment is due to non-interference with the wound and how much, if any, is due to the maggots?

Mr. Dickson Wright follows by enumerating the Davidson treatment of burns by tannic acid crust (to a method of reinforcement of which

reference was made in the *Record* of October 29th), and the strapping of ulcers with adhesive plaster, as additions to the instances given by Mr. Bankart of " neglectful procedures which cure by giving Nature a chance," namely, the Winnett Orr treatment of osteomyelitis, the pus dressings of Sir Henry Gray and the maggots of Baer. It is interesting to note that Mr. Wright convinced himself of the harm done by removing gauze dressings from ulcers, by agitating the dressings with normal saline, centrifuging the extract, and discovering that it contained huge numbers of epithelial cells torn presumably from the healing edges. " Since the days of Lister the daily use of antiseptic gauze dressings for already infected wounds has caused endless suffering and little good," concludes Mr. Wright. " Certain it is that the time is coming when we shall look back upon the daily dressing with the same feelings as we now look back upon the barbarity of the seton, the flux and the issue." W. B.

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[A Study of Bang's Disease with reference to its Occurrence among Veterinary Surgeons in Denmark. Thomsen, Axel. *Rev. Gén. de Méd. Vét.* No. 490. October 15th, 1932. pp. 597-607.]

The first clinical case in man of Bang's disease had been observed some years previously by an American worker, Keefer, but it was not until 1927 that scientific interest was aroused by the communications of Dr. Martin Kristensen.

Numerous investigations in recent years have shown its widespread but unequal distribution in north and central Europe and the United States. Correct statistics of its occurrence in different countries are difficult to obtain owing to many cases escaping notice and the use of different kinds of diagnostic material. Herewith is a list compiled by the author from the literature on the subject (occurrence in man):—

Denmark: 1,800 cases up to April, 1931 (Kristensen).
Norway: a few isolated cases, probably less than 10 (Kristensen).
Sweden: 228 cases up to May, 1930; 100 cases per year (Kling).
Finland: two or three cases altogether (Kristensen).
England: 17 cases up to May, 1930 (Buchanan).
Germany: 626 cases from October 1st, 1929, to September, 1930 (Zeller).
Switzerland: 43 cases up to May, 1930 (Carrière).
Poland: a few isolated cases (Legezynski).
France: a few isolated cases (Magallon).
Holland: 50 cases up to midsummer, 1930.
U.S.A.: 1,670 cases up to October, 1929; 649 cases in 1928; 1,305 cases in 1929 (Hardy).

All the investigators are agreed that the bacterial agent belongs to the Brucella group, comprising a series of strains, namely, Bruce bacillus, Bovine abortion B of Bang-Stribolt, Porcine abortion B of Traum, etc. Danish investigators, notably Kristensen, hold Bang bacillus to be the sole infective agent outside the Mediterranean zone, while the belief of others is in the rôle of a mixture of strains.

Kristensen reports six cases of Bang's disease among Danish veterinary surgeons up to April, 1931. These occurred among men, graduated 1929-30, in whom, as the author points out, a state of immunity had not yet been set up by contact with the disease. In one case an accidental prick from a needle used in injection of living Bang culture was held as the cause, and in another the handling of an infected placenta at a laboratory. The disease terminated, agglutinins disappear rather quickly. In three of the above cases they were not found after four, seven, and 14 months respectively. Quinine had been found to give excellent results in treatment. The author sees in this disease a menace to young veterinary surgeons entering country practice and advises one or two inoculations during the dangerous period. In 1930 a questionnaire sent to 325 veterinary surgeons relative to the occurrence among them of Bang's disease showed that 30 of these believed they had at some period suffered from it. Blood test results in these latter were very doubtful except in two cases, these having occurred two or three years previously. The author's opinion is that no trace of Bang's disease can be found in the blood after about five years. He has demonstrated by blood tests that Bang bacillus infection may occur in many instances without the subject being aware of it. He has found antibodies (in blood tests) in 94 per cent. of country veterinary surgeons, thus demonstrating an immunity to Bang infection, severe or otherwise, in early life.

T. J. M.

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[Contribution to Narcosis in Dogs. Dalgrün. *D.T.W.* No. 37. September 10th, 1932. 581.]

The specialist in canine diseases is always interested in narcotics which are simple and efficient, and free from the official restrictions placed upon the opiates and cocaine. Solutions of ether morphine as well as ether morphine Co. Bengen (Sinopin), with or without the addition of atropin sulphate, may be used successfully as sedatives in small and large domesticated animals. They are, however, unsuitable for the production of deep narcosis in dogs. On the other hand, solutions of morphine hydrochloride, to which atropin sulphate has been added, produce satisfactory narcosis when used either subcutaneously or intravenously. It is

recommended that they be warmed before use. Used subcutaneously, this preparation is easier to apply, but vomition occurs regularly, and narcosis slowly appears and is not lasting, so that it must in certain cases be amplified with ether or chloroform. After the intravenous injection of this solution there is a vigorous stage of excitement, leading soon to narcosis which is satisfactory in depth and duration. This injection is made into the tibial vein, which may be raised by pressure applied just above the hock-joint. The author recommends this technique, since morphine hydrochloride to which atropin sulphate is added in the proportion of 1 : 50 is free from official restrictions and produces narcosis under which quite extensive operations may be performed.

W. L. S.

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[**Pseudo-tuberculosis in Cats.** (*B. pseudotuberculosis rodentium*). Pallaske and Meyn. *D.T.W.* No. 37. September 10th, 1932. 577.]

B. pseudotuberculosis rodentium has frequently been noted as causing disease in rodents and birds, occasionally in domestic animals, and the authors record pseudo-tuberculosis in a series of 12 cats. These animals, both males and females between the ages of one-and-a-half to eight years, were brought to the clinic at Leipzig, and the history generally indicated that the animals had been ill for a matter of weeks and showed inappetence, vomition and enteritis. Emaciation was marked. The most noticeable lesions were present in the liver and spleen and consisted of multiple foci or tubercles of a greyish-white or yellow colour which were raised from the surrounding tissue. The livers were swollen, fatty and brittle in texture and sometimes were ruptured, causing internal hæmorrhage. The spleens showed similar changes. Histologically the lesion was shown to arise from colonisation of the bacteria and the resultant tissue reaction, and staining with hæmatin and œsin showed the micro-organism in striking numbers.

The disease is easily differentiated from tuberculosis in cats through the absence of primary foci, but diagnosis may be assured by resort to staining methods.

The organism is a gram-negative, medium-sized rod, which stains with the ordinary dyes. It can be cultivated from the liver lesion or heart blood and grows well on agar and glucose-blood-agar. The disease was transmitted artificially to mice, guinea-pigs, rabbits, pigeons and finches, and tubercles in the various organs were produced by feline cultures which were shown to be identical with *B. pseudotuberculosis rodentium* from other sources. Probably cats acquire the natural infection *per os* from affected mice.

W. L. S.

Obituary.

MR. E. ALFRED WEST, F.R.C.V.S.

HIS VARIED ACTIVITIES

It is with the deepest regret that we have to announce the death of Mr. E. Alfred West, F.R.C.V.S., of 81, Gray's Inn Road, W.C.1, which took place, after a long illness, at his residence, 8, Morton Crescent, Exmouth, Devon, on Friday, December 2nd, 1932.

Few members of the veterinary profession in this country were more widely known than the late Mr. West, who devoted much time from a busy life of practice to the exercise, on behalf of the National Veterinary Medical Association and the Victoria Veterinary Benevolent Fund, of his remarkable business ability. The keynote of his character was reliability, consistently displayed in judgment and in action, and his whole life was suffused with a cheerful kindliness that found its natural expression in an unceasing concern for the welfare of the less fortunate among his professional brethren and their dependents. The financial well-being of the Fund created by the profession to promote that welfare was thus inevitably Mr. West's main interest, but scarcely less keen was his appreciation of the importance of according active support to the National Veterinary Medical Association.

Essentially a business man, but with professional training, instincts and ideals, it appeared to Mr. West a common-sense matter that the members of the profession should be organised for the prosecution of their campaign for increased status and remuneration. Hence, the " National " had no more ardent, as it had no more efficient, worker than he. For many years he was recognised to be an essential unit in the framework of the organisation he did so much to strengthen, yet it was characteristic of him that he had to be sought out when, at the Annual Meeting of 1925, he was elected to the responsible office of Honorary Treasurer, for his was a retiring disposition, and any degree of limelight was repugnant to him. He served continuously until August, 1930, when ill-health necessitated his retirement from the office, and the improvement in the finances of the Association which took place during that period bore adequate testimony to the wisdom of electing one who not only paid the closest possible attention to his duties, but who brought to his office the accumulated practical business experience of a lifetime.

At the time of his election Mr. West's name had become known to the profession mainly on account of his interest in and active work for the Victoria Veterinary Benevolent Fund, and it was doubtless due to the manner in which he

had been observed to carry out his duties as Treasurer of that Fund, that the members of the Association, at the 1925 meeting, gave a memorably enthusiastic reception to his name. "Of his work for the Benevolent Fund," we wrote in 1927, "too little is generally known. So long ago as 1913, being then the owner of a West End cinema, he arranged, in conformity with the L.C.C. Bye-laws, to devote the profits from Sunday openings to the Benevolent Fund. Though he later disposed of the cinema, he has succeeded in persuading his successors to continue the contribution to the Benevolent Fund, and by this means nearly £1,000 has been added to the Fund up to date. At the present time, over £50 a year is still being received from this source. Not content with this, he has made special appeals on behalf of the Fund, and in 1925 secured over 140 new subscribers."

A member of Council, R.C.V.S., from 1924-1929, Mr. West made a name for himself by contributing wise counsel, more especially in matters of finance.

Mr. West represented the finest type of equine practitioner of the old school. Following a creditable career as a student, he graduated at Camden Town on March 25th, 1886, and secured the Fellowship on April 28th, 1891. After seeing practice with Mr. Low, of Norwich, he came to London forty-five years ago and immediately obtained lucrative employment as Veterinary Surgeon to a new company owning a stud of 'bus and cab horses. This decided him that among horses for the various London transport services he would find enough work to do—at one time he had 2,000 horses on contract within a quarter-of-a-mile of his office in Gray's Inn Road—and he made a special study of that type of horse, quickly becoming not only one of the shrewdest judges of its conformation and soundness, but one of the busiest practitioners in London. His services as Consulting Veterinary Surgeon were requisitioned by the London General Omnibus Company, the Gas Light and Coke Company, and many insurance companies, while he was a familiar figure as judge at the Van- and Cart-horse Parades, and had a long association with the Hunts Agricultural Society, as Veterinary Surgeon. Amongst his wide and varied business interests was a Directorship of the Birmingham Tramway Company.

A London practitioner he remained to the end, but like all West countrymen, he ever retained a pride in and an affection for his native soil; indeed, he never severed his connection with it, for his home address was always "Exmouth," in the neighbourhood of which he ran a dairy farm, and there he passed away.

Of Mr. West it may truly be said that his career exemplified the true art of living for the professional man, for he achieved a most effective combination of praiseworthy effort—on the one hand, by an unremitting attention to his own business affairs, which brought him considerable success, and on the other, by an enthusiastic readiness to assist worth-while activities and individuals, both inside and outside the profession, which called forth wide admiration and affection.

[Mr. West's interment took place on Tuesday last, at Woodbury Church, Exmouth: to this we shall make more extended reference in our next issue.]

Reports

CIVIL VETERINARY DEPT., ASSAM*

A special feature of this report is that it records the fact that the Department has completed the first twenty-five years of its existence. During that period Mr. Harris, the Superintendent, has been in charge. He has now been compelled by ill health to take leave preparatory to retirement and the Government of Assam take the opportunity, in reviewing the report, of acknowledging the value of his services and of expressing the loss the Department will suffer from his retirement.

Faced at the outset by natural prejudice and opposition, it has steadily worked its way into popular favour by means of treatment by inoculation and other methods and has created an ever-increasing demand for its services.

Assam is one of the smaller Provinces of India, and the Department is comparatively small. The Government would appear to be genuinely regretful that the much needed expansion of personnel cannot be considered at present for financial reasons. The employment of an officer for research work has, however, been approved, though it is suggested that it may be difficult to find officers with the necessary qualifications and experience.

During the year, Mr. Harris was assisted by four Veterinary Inspectors and 57 Veterinary Assistant Surgeons. The standard of work has been maintained and good progress made. There were four Government stipendiaries and three private students from the Province undergoing training at the Bengal Veterinary College, but no new stipends were awarded.

Disease.—Rinderpest continued to be the most serious contagious disease, though the mortality was less than in the previous year. Some 13,000 animals were inoculated by the serum alone method and 393 died after inoculation. The serum simultaneous method of dealing with this disease has not been adopted in Assam except on Government farms, but inoculated animals are injected with a mixture of saliva and urine.

* Report for the Year 1931-32 (Assam Government Press, Shillong. Price 1s. 2d.).

Anthrax was fairly general, but the number of deaths was less than in the previous year. Inoculation was carried out in 56 outbreaks and it is reported that a large number of cases in bovines have been treated successfully by intravenous injection of arsenic.

Poultry diseases received attention and a number of birds were inoculated in an outbreak of fowl cholera. Ranikhet disease appears to have been diagnosed in two districts and has caused severe mortality.

The treatment of animals in the dispensaries and on tour was continued satisfactorily, and there was a remarkable increase in the number of weedy bulls castrated with the Burdizzo castrator.

Mr. Harris refers to the danger of public grazing grounds for cattle, contagious and parasitic disease being largely spread through their agency.

Revision of the system of mortality reporting agencies is under consideration. It would appear to be needed.

General.—It is to be hoped that the progress of the Assam Civil Veterinary Department, which has been very steady for twenty-five years, may be maintained and that the Government may find means for the necessary expansion of its activities at no distant date.

G. K. W.

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NYASALAND PROTECTORATE

REPORT OF THE VETERINARY DEPARTMENT FOR THE YEAR ENDED DECEMBER 31st, 1931

The Chief Veterinary Officer, Mr. D. O. Turnbull, D.S.O., M.R.C.V.S., was absent from the Protectorate, on account of ill-health, from April to December, and during this period Mr. J. de Meza, M.R.C.V.S. was stationed at Zomba in the capacity of Acting Chief Veterinary Officer. In addition, the veterinary staff consisted of two professional officers, two European stock inspectors, and 90 African assistants.

The livestock census for the year under review shows that there were in the Protectorate 19,810 European-owned cattle; 155,326 native-owned cattle; 94,406 sheep; 225,129 goats; 70,263 pigs; 220 donkeys and 5 horses. There were 92 dipping tanks, 37 being Government tanks, through which 1,157,021 head of cattle passed during the year.

The activities of the Department have been chiefly in the interest of native stock-owners, and have consisted of the investigation of outbreaks of disease, the castration of surplus male stock, the treatment of calves for worm infestation, the supervision of dipping, the treatment of cattle for trypanosomiasis, the testing of dipping fluid and the examination of smears.

All movement of livestock within the Protectorate is restricted by official permit, and 1,369 such permits were issued. Special precautions were taken against the introduction of foot-and-mouth disease from Southern Rhodesia, the importation from that Colony of all animals, carcasses, hides, skins, hooves, hair, wool, litter, dung and fodder being prohibited. The wheels and under parts of vehicles entering the Protectorate by road were disinfected. It is not stated whether the passengers were similarly treated, but any grass, hay, straw or packing of like description—presumably not the passengers' luggage—was summarily destroyed. In this connection it may be of interest to note that in Southern Rhodesia the disease has not been known to be transmitted except by the closest contact between sick and susceptible cattle.

The attempt has been made to educate the natives in principles of animal management and to impress upon them the benefits to be derived from dipping. Also "great and sustained efforts" have been made to establish a ghee industry for natives in the North Nyassa district. These, however, have not been attended by the success hoped for, but some progress has been made.

The diseases requiring special attention have been trypanosomiasis, which has in several outbreaks been successfully treated; African Coast fever, which exists in enzootic form in most of the districts of the Northern Province; redwater and specific gallsickness; Theileria mutans infection; specific ophthalmia of cattle; demodectic mange; measles in pigs; rabies, two cases of which were confirmed by microscopical examination of the brain of suspected animals; canine distemper and piroplasmosis; distomiasis and worm infestation of calves; fowl cholera and contagious epithelioma of poultry.

Ll. E. W. B.

QUARANTINE STATION FUTURE

As a temporary measure, the Empire Marketing Board have suggested to the Port of London Authority that the lease of the premises at the East India Dock used for the livestock Quarantine Station shall be continued on a three months' basis for the present. Until the future of the Empire Marketing Board has been determined temporary renewal for short periods is likely so as to allow the work of the station to proceed without interruption.

The lease in the ordinary way will expire on December 28th, 1932. The Port of London have verbally accepted the suggestion and official confirmation is expected immediately. This means that the Royal Agricultural Society will probably agree to continue its management of the Quarantine Station as heretofore under a three-monthly occupation of the premises until the future Governmental control of the Station has been agreed upon. Exporters who propose to make use of the Station for stock in the immediate future may therefore have no apprehension.

N.V.M.A. Divisional Reports

NORTH OF ENGLAND DIVISION*

CLINICAL DISCUSSION AT NEWCASTLE-ON-TYNE

A meeting of this Division was held at Armstrong College, Newcastle-on-Tyne, on November 5th, 1932, when the chair was occupied by the President, Mr. H. Hicks, and the attendance book was signed by the following: Messrs. W. J. Young, J. Stewart, C. G. Hill, T. Wilkinson, J. P. Isherwood, T. M. Mitchell, H. S. Elphick, R. Simpson, J. W. Rider, C. Nicholson, J. H. Taylor, W. A. Doughty, A. C. Forbes, R. Barker, F. Pickering, W. H. Blackburn, T. R. Jarvie, W. L. Stewart, C. Elphick, H. P. Lightfoot, J. J. McDowall and J. R. Rider, Hon. Secretary.

Apologies for absence were received from Messrs. H. Peele, J. D. Peele, E. R. Callender, P. Snaith and L. E. Perkins.

The minutes of the previous meeting, having been published in the *Veterinary Record*, were taken as read and confirmed.

Correspondence.—A letter was read from Mr. Perkins suggesting that it would be helpful to members if longer notice of meetings could be given, and proposing that the Council should submit to the Annual Meeting provisional dates for the General Meetings for the ensuing twelve months. It was decided to remit this letter to the Council for consideration.

Confidential correspondence from the N.V.M.A. was also considered and the Secretary was instructed as to the replies to be sent.

REPORT OF COUNCIL MEETING.—The Secretary read the report of the Council meeting, which included the following:—

Library Scheme.—The Council considered draft rules to govern this scheme, and after discussion, decided to have the rules printed in a form suitable for easy reference, and issued to members.

Negotiations with the Sunderland Branch, R.S.P.C.A.—Detailed reports of the negotiations were submitted, from which it appeared that the Committee of the Sunderland Branch had agreed to the conditions proposed by the Association, and was enthusiastically active in working out the details for a Central Dispensary. Suitable premises had been secured on favourable terms, the work of reconstruction was making good progress, and it was hoped that the Dispensary would be formally opened on November 15th.

The report of the Council was received and unanimously adopted.

*Received for publication November 25th.

CLINICAL CASES CONTRIBUTED BY MEMBERS

Mr. C. G. HILL submitted the following cases which had come within his recent experience:—

(1) (Exhibit.) The brain of a heifer which had been reported as suffering from lightning shock. The animal showed brain symptoms, and muscular inco-ordination. The head was turned to the right side, and on movement the right fore-limb was raised in an abnormal manner. The animal was slaughtered, when tuberculous lesions were found in the mediastinal glands. There was no evidence of tuberculous meningitis, but when the cerebrum was sectioned calcified tuberculous lesions were found.

(2) A dog was brought for examination, with the history that the animal had been unable to swallow for a week. Examination showed a tumour-like mass, as large as a tangerine orange, attached to the laryngeal cartilages. A guarded prognosis was given, but it was decided to attempt the ablation of the mass. A local anæsthetic was given, and after careful dissection the mass, which was found to be adherent to the outer surface of the larynx, was removed. An hour later the dog was able to take soft food, and ultimately made an uneventful recovery.

(3) Tetany in Welsh ponies. Mr. Hill was called to the railway station to see a number of Welsh stallion ponies in transit, and found one pony down in the truck, unable to rise, and apparently suffering from acute enteritis. Three other ponies were confined in a yard, and exhibited symptoms closely resembling milk fever in cows. Two of these animals received calcium, and appeared normal by the next day. The first pony was evidently *in extremis*, and received morphia shortly before death. A *post-mortem* examination of this animal showed, as the chief feature of interest, an extremely heavy infestation of *Sclerostomum vulgaris*, and the presence of *Distoma hepaticum* in the liver. Mr. Hill observed that all ponies were in good condition, and having regard to this, it was remarkable that so many sclerostomes should be present.

Mr. C. ELPHICK, in discussing Mr. Hill's cases, remarked that in previous years Newcastle was a good centre to see many cases of transit tetany in ponies. The symptoms certainly resembled tetanus, and muscular spasms were a prominent feature. The only treatment he had adopted was to relieve the bladder by means of the catheter, and this had been followed by recovery.

Mr. W. L. STEWART observed that the subcutaneous injection of air had been said to be followed by recovery.

Mr. T. M. MITCHELL said he had seen two cases of tetany in Welsh pony mares in which symptoms were exhibited after a night's rest in a sale yard. The convulsions actually occurred

during the sale. Recovery in these cases was uneventful, after the injection of calcium.

Mr. Mitchell also demonstrated his apparatus for the administration of large quantities of calcium solution. This consisted of a large bottle closed by a rubber stopper, through which a glass tube was passed. Attached to the lower end of the tube was a valve similar to that used on Higginson's syringe. A long length of rubber tube, having a bulb on its course, was used to connect the bottle to the hypodermic needle. By this means it was possible to inject large quantities of fluid, and to avoid contamination of the fluid while making the injection.

Mr. Mitchell practised the injection of calcium in several areas some distance apart, and while he was not prepared to say that sloughing could not occur, it had been a very rare experience since he adopted his method. He believed that sloughs might follow the injection of too large quantities of fluid in adjacent sites, for it was then possible for confluence to take place under the skin. He always practised subcutaneous injection.

Mr. H. S. Elphick was particularly interested in Mr. Hill's dog case. He had seen many cases of tumour inside the dog's throat, and he believed these were usually malignant in character. He also referred to the cases of transit tetany, saying that he had not observed the condition in mares, possibly because mares were not used in the pits, and most of these Welsh ponies were destined for pit work. The use of the catheter certainly did relieve the condition. The calcium treatment had not been developed at the time of which he was speaking.

Mr. W. J. Young enquired whether a smear of the brain lesion in the heifer had been made, and stained, to demonstrate the tubercle bacillus. He also thought it would have been instructive to test portions of the calcified lesion with acetic acid to detect the presence of lime salts. He had seen many cases of transit tetany in mares and geldings. His first experience was with pit ponies in transit during 1916. These animals were found to be sweating profusely, and the mouths were fixed. Elevation of the head did not cause protrusion of the membrana nictitans. He thought the condition was a form of tetanus, and a second opinion was consulted. Some of the animals were treated with subcutaneous injections of chloral hydrate, but others were put in a field, without treatment, and recovered. *Post-mortem* examination of fatal cases showed the presence of sclerostomes, and *Tænia perfoliata*. Transit tetany was not confined to ponies, but had also been seen in Clydesdale mares sent to stud. The animals were kept quiet, without treatment, and recovery occurred in two or three days.

Mr. C. Elphick enquired if the mare was alone, because he recalled a case in which a foal had to be removed from the mare for docking, and by the time the operation was completed the mare was found to be showing all the symptoms of transit tetany. Within half-an-hour of the foal being returned the mare recovered.

Mr. Young replied in the affirmative.

Mr. W. L. Stewart, referring to the causation of transit tetany, said that it was believed to be due to a fall in the calcium content of the blood, and possibly an imbalance of the thyroid gland might play a part in the production of symptoms.

A vote of thanks to the President for his conduct in the chair terminated the proceedings.

J. R. Rider, *Hon. Secretary.*

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LINCOLNSHIRE AND DISTRICT DIVISION

AUTUMN MEETING AT LINCOLN*

The autumn meeting of the above Division was held at the Albion Hotel, Lincoln, on Thursday, October 13th, the President, A. J. Hines, Esq., taking the chair. Those present were Messrs. Cartwright, Porter-Smith, Logan, Lang, Hudson, Swaby, Eaton, and H. C. Reeks, junr., with Mr. Matthews as a visitor.

Apologies for absence were received from Messrs. Bindloss, Leach, Standley, Townsend, F. L. Gooch, Truman, Hicks, Sugden, and Professor Macqueen.

Election to and Nomination for Membership.—Mr. G. Gibson, of Oakham, proposed and seconded at the last meeting, was elected a member of the Association, and Mr. W. Gibson, of St. Peter's Hill, Grantham, was proposed by the Hon. Secretary and seconded by Mr. Porter-Smith.

Correspondence.—A letter was read from the President of the N.V.M.A. explaining the offer of the Veterinary Department of the Ministry to allow one of their officers to attend meetings of the Divisions for the purpose of giving lectures and demonstrations on poultry diseases. After some discussion it was decided that the Secretary should attempt to make some such arrangement for the next meeting of the Division.

Paper.—The President then called upon Mr. A. L. Mullen, M.R.C.V.S., D.V.S.M., to read his paper on "Pathological Conditions of the Bovine Joint as a Clinical Manifestation of Bang's Disease." In doing so, Mr. Hines said he was sure that they were all very pleased to have Mr. Mullen with them and that they looked for an interesting paper and a profitable discussion. [Mr. Mullen's paper, and a report of the ensuing discussion, are reproduced at the commencement of this issue.—Ed., *V.R.*]

Votes of thanks to the essayist and to the President for his conduct in the chair concluded a successful meeting.

H. C. Reeks, Junr., *Hon. Secretary.*

* Received for publication November 18th.

In Parliament

The following questions and answers have been recorded in the House of Commons recently:—

Vivisection

Mr. Groves asked the Home Secretary whether he is satisfied that the 745 visits paid to places registered for vivisection by the two inspectors under the Act, 39 and 40 Vic., c 77, during the year 1931 was a sufficient proportion of visits in relation to the 613,562 experiments performed during that year on living animals to ensure that the protection that the Act purports to give is in fact given?

Mr. Stanley: My right hon. Friend has no reason to believe that the present system of inspection is not sufficient to ensure compliance with the provisions of the Act.

Mr. Groves: Does the hon. Gentleman himself believe that this proportion of visits is satisfactory?

Mr. Stanley: I think the basis of ratio which the hon. Gentleman has selected really proves nothing. The number of experiments are, of course, counted by each particular time any operation is performed, and in a single case of inoculation, for instance, every time an inoculation is performed that would appear as an experiment.

. . . . . .

Musk Rats (Shropshire)

Mr. T. Williams asked the Minister of Agriculture at what date permission was given to import musk rats for the purpose of setting up the musquash farm at Shrawardine Pool, in Shropshire; whether any precautions against escape were laid down in that connection; and whether any action is to be taken against the owner for permitting musk rats to escape from the farm?

Captain Sir George Bowyer: I have been asked to reply. The musk rats in question were brought into this country in October, 1929, there being at that time no restrictions whatever on the importation and keeping of musk rats in Great Britain. Such restrictions only came into operation on May 1st, 1932, following the making of an Order and Regulations under the Destructive Imported Animals Act, 1932. In these circumstances the second part of the question does not arise. The reply to the final paragraph is in the negative as no offence had been committed under the Act for which proceedings could be taken.

Mr. Williams asked the Minister of Agriculture if his attention has been drawn to the estimated number of musk rats in the County of Salop, over 1,000,000; and what action is being taken to deal with this menace to the rivers and reservoirs in England and Wales?

Sir G. Bowyer: Various unofficial estimates of the number of musk rats at large in Shropshire have been made but they are purely conjectural. As regards remedial or preventive action, the Ministry has 27 trappers at work under expert supervision in the infested area. Catchment Boards and canal owners throughout the country have been circularised and asked to report any signs of infestation, and an explanatory pamphlet has been prepared and widely circulated.

Mr. Logan: Is the estimate of 1,000,000 correct?

Mr. Williams: While thanking the hon. and gallant Gentleman for that very comprehensive reply, may I ask him to assure farmers and others in various parts of Shropshire that the Department are doing their best to eliminate this danger?

Mr. Mander: Is the hon. and gallant Gentleman aware that there is a very large stock of traps for catching these rats, in Wednesfield, where they are nearly all made?

Richmond Park: Riding Exercise

Sir J. Wardlaw-Milne asked the First Commissioner of Works whether he is aware of the resentment among the public using Richmond Park for riding exercise at the closing of all the riding tracks; and whether he will make arrangements that such tracks as require to be closed for the purpose of allowing the grass to recover shall be closed in rotation, so as to allow opportunities for those accustomed to use the park for riding?

Mr. Ormsby-Gore: I am not aware of any general feeling of resentment on account of the measures which have had to be taken to close unsightly tracks in Richmond Park. These measures were decided upon after the whole position had been explained to all the parties interested. I would point out that my aim is to prevent the formation of tracks and to encourage riders to keep to the open parts of the park. I would add that I am not closing the park to riders on any day before 10 a.m. and that it has only been closed once, and then only for an hour or so, on account of very heavy rain, when riding would necessarily have inflicted severe damage.

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Canadian Cattle Imports

In the House of Lords on December 1st,

Lord Strachie asked the Parliamentary Secretary of the Ministry of Agriculture what steps the Minister is taking to provide for inspection of Canadian cattle imported under section 8 of the Ottawa Agreements Act, and moved for papers. He said that unsterilised cattle could now come into this country, whether suitable for breeding or not.

Earl de la Warr, Parliamentary Secretary to the Ministry of Agriculture, said that the Ministry intended to take every step possible to ensure that only breeding cattle of good quality were admitted from Canada into this country. At present this particular provision of the Ottawa Agreement was not in force. It was intended that the undertaking of this country with Canada and the undertaking of Canada with this country should be put into force on the same date, and he hoped that arrangements would shortly be concluded. It was not intended to use the existing machinery of the inspection of Canadian cattle, but to use the livestock officers who were already at the disposal of the Ministry. For the time being they did not expect very great numbers of these cattle to be coming into this country, and, if that were so, it would not be necessary to increase the staff.

The motion for papers was withdrawn.

"Veterinary Pathology and Bacteriology," by Gaiger and Davies

Captain A. W. Noel Pillers' letter *re* the above, published in our issue of November 26th, has been submitted to the reviewer, who writes to the effect that he regrets that there was an error in the review with regard to the point raised by Captain Pillers.

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General Medical Council Registrar

It is announced that Mr. Norman King, Registrar since 1911, is to retire. Mr. Michael Heseltine, of the Ministry of Health, has been appointed Joint Registrar of the Council and the Dental Board, to take effect at the end of the summer session in May next.

Notes and News

The Editor will be glad to receive items of professional interest for inclusion in these columns.

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DIARY OF EVENTS

Dec. 10th.—R.C.V.S. Oral Examinations begin in Dublin.

Dec. 10th.—Meeting of the North of England Division, N.V.M.A., at Newcastle-on-Tyne.

Dec. 12th.—Meeting of the Editorial Committee, N.V.M.A., at 2, Verulam Buildings, Gray's Inn, W.C.1, at 4.30 p.m.

Dec. 16th.—Meeting of the Lancashire Division, N.V.M.A., at Manchester.

Dec. 22nd.—R.C.V.S. Oral Examinations conclude in London.

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R.C.V.S. OBITUARY

Brittain, H. A. G. K., 16, Redcar Road, Guisborough, Yorks. Graduated N.Ed., July 28th, 1897; died November 30th, 1932.

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West, E. Alfred, 81, Gray's Inn Road, London, W.C.1. Graduated London, March 25th, 1886; Fellow April 28th, 1981; died at 8, Morton Crescent, Exmouth, December 2nd, 1932; aged 72 years.

[*A Notice of the late Mr. West's life and work is published on pages* 1463 *and* 1464.]

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The Late Mr. Brittain

"Mr. Brittain, who was well known in Middlesbrough and Cleveland, has been in indifferent health for some time, but was able to attend to business up to last week," says the Northern *Echo*.

"For nearly 40 years he had been engaged as a veterinary surgeon at Guisborough, and had a professional practice extending over a wide area. During the war he was a War Office remount officer.

"Mr. Brittain, who was educated at Newcastle and Edinburgh, was a Past Master of the Zetland Lodge of Freemasons, Guisborough, and a Past Principal of the Priory Chapter. He was a bachelor."

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PERSONAL

Appointments.—In succession to Mr. P. J. Mullane (retired), Chief Inspector of Meat, Inspector under the Diseases of Animals Acts, and Veterinary Surgeon for the Public Works Department, Cardiff Health Committee have appointed Mr. L. Bernard Grace, M.R.C.V.S., D.V.S.M. Mr. Grace has had a remarkably successful career for so young a man. Qualifying at Glasgow in 1924, he obtained his D.V.S.M. in 1926, having studied his public health work under Mr. Begg and Colonel Young, and general practice with Mr. Willett and others. Selected and sent to Chili by Lieut.-Colonel T. Dunlop Young, he then served for some time in the Ministry of Agriculture, subsequently becoming Lecturer on Pathology and Bacteriology at Glasgow Veterinary College. At present he holds the post of Veterinary Education officer to Derby County Council. Mr. Grace shows great promise of reaching a high position as a Public Health Officer.

We learn that Mr. A. H. Hunter, M.R.C.V.S., B.V.Sc. (Toronto), D.V.S.M., is now Manager of the Compania Frigorifico de Patagonia—a very important position. Mr. Hunter, also, was amongst those selected by Colonel Young and sent to Chili to teach meat inspection.

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Will.—Mr. Frank Law Somerset, of Matlock, formerly of Chesterfield, veterinary surgeon, who died on August 10th, left estate of the gross value of £9,529, with net personalty £8,020. He left his property on trust for his wife during widowhood, and then equally between his children on attaining their majority.

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"FIELD" DISTEMPER COUNCIL'S FINAL REPORT

The above report was issued for publication on Saturday last. In it are reviewed the successful results achieved following upon the researches promoted by the *Field* Distemper Council into the cause, prevention and treatment of canine distemper, and tribute is paid to the brilliant manner in which the investigators, Dr. P. P. Laidlaw and Major G. W. Dunkin, have brought their researches, with great labour and by the use of new methods, to triumphant issue in a field of great difficulty. Recognition is also given to the generous provision of material resources by the British and American public in voluntary donations and by Parliament here through the Medical Research Council.

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

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CONTAGIOUS IRIDO-CYCLITIS IN SHEEP

To the Editor of the Veterinary Record.

Sir,—I was much interested in the last two numbers of the *Record*, in which reference is made to a contagious form of ophthalmia in sheep, as I met with an outbreak in 1920 in a flock of Suffolks.

The owner purchased two score shearling ewes to bring the strength of the flock to fifteen score. These were purchased at a sale some forty miles away, and at the time of purchase some of the shearlings were noticed to be weeping, which the shepherd thought was due to irritation by flies, as it was in August. However, in three or four days after these shearlings were added to the flock, some of his own original ewes became affected, and when I saw them at least half the ewes were affected and in several there was marked opacity of the cornea. The affected sheep were moved to a fold on the further side of a big field, and treated with sulphate of zinc lotion, and for those with opacity of the cornea I prescribed cuprol (Parke, Davis). The ophthalmia eventually cleared up, and there has been no recurrence.

An interesting proof of the contagious character of the disease was demonstrated. A flock ewe, prior to the purchase of the shearlings, had an extensive wound on the side, and she had been removed to the buildings and put in a box. One of the ewes had opacity in both eyes to such a degree that she was blind, and was put in the

box along with the ewe with the wound, and in three or four days this ewe became affected with ophthalmia.

May I take this opportunity of adding, in another connection, that I was interested to see that Mr. Collet, of Aylesbury, mentions in an article in the November *Veterinary Journal*, on his treatment of inversion of the uterus, that two cases which he cites were associated with milk fever.

Yours faithfully,
T. G. Heatley.

Woodbridge,
Suffolk.
December 5th, 1932.

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To the Editor of the Veterinary Record.

Sir,—Apparently Messrs. Harvey and Mayall have not had recourse to the records of this disease in Great Britain. If they would take the trouble to look through the pages of the now defunct *Veterinarian*, the back numbers of the *Veterinary Journal* and the *Veterinary Record*, and the pages of the *Journal of the Royal Agricultural Society*, they would find it has been referred to on many occasions, not under the above name, but as contagious ophthalmia, epizoötic keratitis, etc.

On p. 179 of Nicolas' *Veterinary Ophthalmology*, published in 1914, I wrote: "Richard Hughes, of Oswestry, and many others have met with it in epizoötics in cattle and sheep in England."

It is to be hoped that some of the younger members of the profession will report their observations and that the compilers of text-books will give the recorders credit as an encouragement to others to do likewise.

Continental text-books usually give very good bibliographies or references.

Yours faithfully,
Henry Gray.

December 4th, 1932.

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"A CLINICAL COMMENTARY"

To the Editor of the Veterinary Record.

Sir,—On page 1433 of yesterday's *Record* I am reported as having stated, during the discussion on Captain Wortley's paper on the above subject, that I had had "reasonably successful results in many cases of open joint, using in the majority of cases cold water and *bitter aloes*." (The italics are mine.) This should have read "cold water and *powdered alum*."

Also, I am misrepresented in my remarks on the anæsthetisation of the cat; what I said was that in my experience one lost the majority of cases in which pure chloroform was used and that the A.C.E. mixture was much more satisfactory.

To my mind there is little doubt that "Avertin" is the best anæsthetic for feline purposes.

Yours faithfully,
W. H. Dennett.

Fakenham,
Norfolk.
December 4th, 1932.

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PASTEURISATION AND TUBERCULOUS MILK

To the Editor of the Veterinary Record.

Sir,—In a letter under the above heading, published in last week's issue, Mr. J. B. Tutt enquires as to the efficacy of pasteurisation in killing the tubercle bacillus in milk. I think it is now accepted that the answer is "it does." I suggest that when Mr. Tutt discussed this question, as he says, "some years ago," it was probably prior to 1923 when the term "Pasteurisation" was loosely applied and no statutory definition of the process had been drawn up.

My reason for this assumption is that he seems to think that the low temperature to which pasteurised milk is raised is an important part of the process, whereas, of course, it is the fact that the milk is then held at that temperature for not less than 30 minutes that destroys the bacillus.

The experience in Manchester is that the process is effective, and our conclusions have been entirely based on the treatment of *naturally* infected milks.

For further information on this subject, I strongly advise Mr. Tutt, or indeed any member of the profession who has not already done so, to read the report of the Special Committee of the People's League of Health entitled "A Survey of Tuberculosis of Bovine Origin in Great Britain." The address of the League is 12, Stratford Place, London, W.1, and the price is 1s. 6d. In the report I would specially refer Mr. Tutt to page 22 (*b*), page 32 (para. 16), and pages 33 to 35, dealing with pasteurisation, not the least important of which is page 33, para. 22.

This report was only published this year and sets forth the present state of affairs with regard to this subject in an attractively clear and readable manner.

Yours faithfully,
R. C. Locke.

Public Health Department,
Manchester.
December 6th, 1932.

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THE SLAUGHTER OF PIGS BY MEANS OF THE USE OF THE ELECTROLETHALER

To the Editor of the Veterinary Record.

Sir,—The Council of the Royal Society for the Prevention of Cruelty to Animals, fully realising its responsibility with regard to the prevention of unnecessary suffering in the slaughter of animals used for food, has for some time conducted a meticulous investigation into the use and effects of the Electrolethaler as a method of ensuring unconsciousness prior to and during the slaughter of pigs and has been in close touch with certain well-known scientists, physiologists and pathologists.

As the result of these independent investigations, the Society is satisfied and has, therefore, decided to recommend the use on pigs of the Electrolethaler as an alternative to the Humane Killer, provided that the proper precautions are taken in regard to the provision of the apparatus and use.

Yours faithfully,
E. G. Fairholme, *Chief Secretary.*

R.S.P.C.A.,
105, Jermyn Street,
London, S.W.1.
November 17th, 1932.

The Editor acknowledges, with thanks, the receipt of the following:—

Report of a meeting of the Veterinary Medical Association of Ireland, from Professor J. J. O'Connor, Hon. Secretary.

Communication from Mr. R. Machin (Henley-on-Thames).